STATE OF UTAH
NATURAL RESOURCES
Oil, Gas & Mining

4241 State Office Building • Salt Lake City, UT 84114 • 801-533-5771

Scott M. Matheson, Governor
Temple A. Reynolds, Executive Director
Dianne R. Nielson, Ph.D., Division Director

May 24, 1984

Mr. Wilford Ruf, Property Manager
Crater Exploration, Inc.
945 East 7145 South, Suite 202
Midvale, Utah 84047

RE: Mine Plan Review
Taylor Placer Property
ACT/019/016
Grand County, Utah

Dear Mr. Ruf:

The Division staff have reviewed form MR-1 and subsequent documents submitted by Crater Exploration, Inc., for permitting of the Cato #1 and Nancy mines to determine compliance with the Utah Mined Land Reclamation Act of 1975, Title 40-8, Utah Code Annotated 1953, and the rules and regulations of same. Due to the proximity of the two mines and the fact that they will eventually be joined, they will be handled under one permit.

In the review, certain necessary information was found to be lacking. The additional information that is needed to complete the review is detailed in the following document. When the additional information has been received, the total plan will be assessed for compliance with the regulations. Please use the rule numbers as referenced in this document to organize your response. They refer to rules in the Mined Land Reclamation Act.

If you have any questions, or would like to meet with members of the review team, please contact me.

Sincerely,

Susan C. Linner

Susan C. Linner
Permit Supervisor/
Reclamation Biologist

SCL/btb

Enclosures

cc: R. Summers, DOGM
T. Tetting, DOGM
S. Storrud, DOGM
T. Portle, DOGM
90120

MINE PLAN REVIEW DOCUMENT

Crater Exploration Inc.
Taylor Placer Property
ACT/019/016, Grand County, Utah

May 24, 1984

Rule M-3
M-6-SCL

Since the applicant proposes a surface mining operation with reclamation occurring behind mining as the working area progresses, the applicant must submit a map showing proposed areas of mining and reclamation by year for the life of the permit (at least five years). This map should be of a scale similar to Map #1 (1:600).

Rule M-3(1)(d)-RS

The applicant is required to depict all intermittent and ephemeral streams on the maps. The area to be shown includes all lands affected, which by definition include roads, therefore, the maps must be extended to the entrance gate.

How will water used in the processing be disposed of? What is the expected quality of this water? How will the tailings mass (contaminated with floatant chemicals) be disposed of? The applicant must discuss the disposal of these and any other toxic or potentially toxic materials in more detail.

Rule M-3(1)(f)
Rule M-10(11)-RS

The drainage plan should clearly show all means for routing water from disturbed lands and the means for sediment control for those lands. Design calculations for ditches, berms and sediment ponds or basins should be submitted.

Rule M-3(2)
Rule M-10(7 & 8)-RS

A reclamation plan must be submitted detailing the removal of the ponds on site and restoration of natural drinage patterns at the site. Plans should include removal or stablization (including drainage, erosion protection, and cross drains) of all on-site roads and pads.

Rule M-3(2)(c)(2)-TNT

A plan for storage and disposal of "toxic or unsuitable materials" needs to be developed and submitted covering at a minimum diesel or other fuels, waste oil and solvents.

Rule M-3(2)(d)
Rule M-3(3)-TNT

How will mining, sorting and backfilling be accomplished? Please include such details as the types and amount of equipment to be used as well as the methods.

Rules M-3(2)(d)
Rule M-10(4) and (5)-TNT

Cross-sections should be utilized by the operator to describe or further delineate intentions to handle the exposed highwall directly north of the water supply pond. Backfilling should be discussed. What depth will mining attempts reach in the process? What is the maximum height of proposed cuts and new highwalls? Estimates based upon prior excavations may suffice.

Rule M-3(2)(e)-SCL

The applicant has supplied a seed mix for reclamation which is acceptable to the Division. However, the applicant must detail how many pounds of pure live seed (PLS) per acre of each species will be seeded and what seeding method will be used (i.e., broadcast or drill seeding). A complete reclamation plan must also include seedbed preparation techniques, and details of any types of mulching or fertilizer to be used and the amounts of each to be used.

The applicant notes (response #25-B) that he may not be able to control cattle access to the property. However, the applicant is reminded that he is responsible to ensure that the revegetation success standard is met (see section M-3(2)(e)/M-10(1); bond will not be released until the standard has been achieved.

Rule M-3(2)(e)
M-10(1)-SCL

The Division concurs that the permit area has been highly overgrazed, that there currently is no, or very little protective vegetative cover and that reclamation activities have potential to improve the area for the given land use of livestock grazing. The applicant will be required through revegetation to control erosion,and establish a permanent and protective vegetative cover that is capable of supporting the postmining land-use of livestock grazing.

Rule M-3(2)(f)-SS

Applicant must submit a more detailed plan for reclamation during or after placer operations have taken place. A map showing this sequence will be required (see Section Rule M-3/M-6).

Rule M-5-Surety Guarantee-SS

Applicant must provide a more detailed cost of reclamation to substantiate the summary sheet submitted, i.e., yd^3 backfilled and regraded, type of machinery, haul distances, rental rates, operating costs, including total number of acres to be reclaimed. Applicant is advised to confer with state biologists on seed mix and seeding and planting costs.

(NOTE: If detailed information is not received, the Division will estimate the bond amount from maps, any information given and reclamation assumptions.)

Rule M-5-TNT

Calculations indicate that possibly three to five acres will be disturbed per year, per unit. This means that with two units, between 6 and 10 acres will be disturbed. An additional two acres (minimum) will be utilized for the office and road. Also disturbed in conjunction with the operation will be the already constructed ponds and dams, at least six acres. Consequently, between 14 and 18 acres will be used the first year. However, contemporaneous reclamation, if implemented, cannot produce acreage to be released for at least three years. By the end of that time, at least 26 to 38 acres will be disturbed. These figures are substantially different from those presented by the operators and need to be correlated with a new presentation.

Rule M-6-TNT

Map #1 contains two conflicting scales; which is correct?

Rules M-10(3) and (12)-TNT

Does the area described as "not workable" constitute the cliffs and sandstone outcrops?

Rule M-10(3)-TNT

Current pond designs of the inplace structures need to be placed into the mine plan and submitted for approval to the Department of State Health, Bureau of Water Pollution Control (see letter from Steven McNeal dated February 21, 1984 to Wilford Ruf).

Rules M-10(3), (5), (7), (8) and (15)-TNT

A variance should be requested by the operator to retain the ponds, dam and road if desired by the owner. Written confirmation from Mr. Taylor should be supplied.

Rule M-10(8)-RS

The applicant must discuss the blockage of the natural drainage or that drainage entering the process ponds noted during a site tour by Wayne Hedberg, Sue Linner and Tom Tetting (April 9, 1984). This information must include calculations for sizing of the ponds and the drainage area for each pond.

Rule M-10(6)-RS

The Division recommends the use of liners in all process ponds utilizing the floatant chemicals described in the April 24, 1984 letter to the Division from Wilford Ruff.

Rule M-10(11)-TNT

Why is the point of diversion which was applied for west of Dewey Bridge located an estimated 1,800 feet east of the water supply ponds instead of where the water was previously drawn? How will the overland water conveyance be engineered? When will this point of diversion change application be approved?

Rule M-10(12)-SCL

Monitoring of revegetated areas during the bond release period must be discussed. Revegetated areas should be checked at least once each year to determine reclamation success and whether there is a need for further treatments. The applicant should supply information on how reclamation success will be sampled and what time of year the sampling will be done. Funds for monitoring of revegetation success must be included in surety calculations.

Rules M-10(14)
Rule M-3(1)(f)(g)
Rule M-3(2)(d)-TLP

Baseline Information

The applicant should provide a map (1:6000 or larger) which clearly depicts the areas slated to be disturbed in the near future.

The applicant should provide a sampling plan indicating the parameters to be sampled for. This plan should include sampling of:

1. Areas slated for disturbance;

2. Existing topsoil stockpile locations;

3. The disturbed area (subsoil and overburden) to which topsoil will be applied.

The above mentioned map should include the exact location of all sample points for data provided in the applicant's March 4, 1984 letter.

Soil Removal

In Item 21C (Addendum), the applicant states that scrapers will be used to remove topsoil. The applicant must expand on this by indicating how soil stripping isopach maps will be used as a guide to specific removal depths, including staking to indicate depth of removal to equipment operators or an equivalent method.

Soil Stockpile Protection and Volume

What measures will be employed to achieve adequate topsoil stockpile protection? Will drainage be diverted away from piles? Will berms be used to retain soil? Will terraces be employed on soil stockpiles? Will seeding and/or mulching be utilized or will other surface stabilizing agents be used?

The applicant shall indicate what seed mix was employed on the existing soil stockpile. What mix will be employed for the protection of future stockpiles? The seed mix cited under item 25-E(p5) would be acceptable to the Division. Please respond appropriately.

The applicant must agree to employ the following soil tabulation chart or an equivalent means to keep a running total of acreage disturbed versus available soil for reclamation.

SOIL TABULATION CHART

Area affected (in mining sequence)	Area 1 2 3 etc.
Acreage of Area	
Depth of topsoil removal (inches)	
Depth of topsoil replacement (inches)*	
Estimate of topsoil volume salvaged (yd^3)	
Volume actually salvaged (yd^3)	
Volume required for reclamation (yd^3)	
Surplus or deficit volume (yd^3)	
Storage status (short or long term)	

SOIL TABULATION CHART (continued)

Area affected (in mining sequence)	Area 1 2 3 etc.
Storage location	
Area where soil used (if not stored)	
Running total (all stockpiles (yd^3)	
Short term	
Long term	

Subsoil or Overburden Preparation, Soil Redistribution, Fertility Testing and Fertilizer Application

Address preparation of overburden or subsoil (scarification or ripping) and equipment used.

Show how grading will be accomplished and the final surface configuration achieved, including implements to be used.

Specify the season of the year in which soil redistribution will occur, the implements to be employed and the depth of replacement. In item 23 (page 4), the replacement depth cited is one foot. However, in item 21-B, the figure of 6,500 cubic yards per acre is cited which would yield 3.7 feet depth.

$$\frac{(6500 \text{ X } 27 = 162{,}500 \text{ square feet})}{43{,}560 \text{ ft/ac}} = 3.7 \text{ foot replacement depth}$$

Please reconcile this contradiction.

What testing will be done to determine fertilizer needs? (Available nitrogen, phosphorous and potassium should be determined, at a minimum). The amount of fertilizer needed can be determined at that time, but a minimum commitment, including form of fertilizer is needed for bonding purposes and should be based on data provided in the March 4, 1984 letter. Based on data contained in this letter, 10 lbs of nitrogen per acre, 30 lbs phosphorus per acre, 20 lbs potassium per acre and 20 lbs of zinc per acre should be added. Detail how fertilizer will be applied, including the implements to be employed.

STATE OF UTAH
NATURAL RESOURCES & ENERGY
Water Rights

1636 West North Temple • Salt Lake City, UT 84116 • 801-533-6071

JUN 19 1984

Scott M. Matheson, Governor
Temple A. Reynolds, Executive Director
Dee C. Hansen, State Engineer

June 15, 1984

Crater Exploration, Inc.
954 East 7145 South
Midvale, Utah 84047

Dear Applicant:

RE: APPROVED CHANGE
APPLICATION NO. 01-179 (a-13089)

Enclosed is a copy of approved Change Application No. 01-179 (a-13089). This is your authority to proceed with the actual construction work which, under Section 73-3-10 and 73-3-12, Utah Code Annotated, 1953, as amended, must be diligently prosecuted to completion. The water must be put to beneficial use and proof of appropriation filed with the State Engineer, as provided in the original application as amended by this approved change application.

Failure on your part to comply with the requirements of the statutes may result in forfeiture of your application.

Yours truly,

Dee C. Hansen

Dee C. Hansen, P.E.
State Engineer

slm
Encl.: Copy of Approved Change Application

Rule M-3, M-6-SCL
A map with requested information is enclosed. However, it must be understood that these areas are approximate only since the exact depth and quantities of the gravel is not available at this time.

Rule M-3 (1) (d) - RS
The road to the gate is shown on the enclosed map. Water is all recycled and only losses due mostly to evaporation will be replaced from the river.
The quality of the water and tailings mass is being cleared with the Department of Health.

Rule M-3 (1) (f) and Rule M-10 (11) - RS
There are no drainage problems on the property. All water will be permitted to run off naturally to the river with the exception of the water used in the process which will be limited strictly to the tailings ponds and the recycling circuit. The only drainage affected is the one in unit No. 3; these ponds have been approved by the State Engineer. The Department of Environmental Health and Water Pollution has already passed on the ponds of Unit #3 and their location. No other water on the property needs any special handling.

Rule M-3 (2) and Rule M-10 (7 & 8) - RS
Upon termination of the project, the ponds will be filled in where required for grading, sloping generally, and as evenly as reasonable, towards the river. If the property owner wishes to have us do it otherwise, at the time of reclamation, a variance may then be requested. The only drainage channel affected is on Unit #3 and will be left in it's natural place where it will be left on bedrock as it was previously. The road and other graded areas established for access to or operation of the minesites, will be eliminated and become part of the general grading plan, unless the owner of the property wishes otherwise at that time.

Rule M-3 (2) (c) (2) - TNT
The fuel for the equipment is stored in an EPA certified tank for that purpose and located at the site of the office trailer. Any other material you call unsuitable are stored in sealed drums on a concrete pad at the flotation site until used and the drums are hauled off and discarded after use. If any major spills should occur, we would contact the Health Department to receive their advice as to how to deal with the situation. This, however, is a very unlikely prospect due to the manner in which these substances are handled.

Rule M-3 (2) (d) and Rule M-3 (3) - TNT
Mining will be done with one large front end loader for each Unit which will also replace the screened and washed materials; one bulldozer, one backhoe and one traxcavator

are on the site to be used at the various units as needed; additional equipment may be brought in to help in the operation if conditions demand them. All material is washed and all oversize, e.g. 1 mm plus is then replaced back into the pit or placed according to the wishes of the property owner. The remainder is processed further by separation and run through the flotation cells, where all but the values return to the first pond. This is periodically cleaned with the front end loaders and the material replaced into the pit area.

Rule M-3 (2) (d) Rule M-10 (4 & 5) - TNT
The exposed highwalls in all excavated areas, during operation will be handled in a manner consistent with safe mining practices. After back filling the area will be left in such a condition as to eliminate any danger from collapse to persons or animals. The deepest excavation is estimated to be about 30 feet. That, however, will vary with the bedrock location. To show slopes on cross-sections would be an estimate at best due to the varied conditions encountered on that property.

Rule M-3 (2) (e) - SCL
The seed used will be of generally accepted standards and in a proportion suggested by your department. The topsoil will very likely be redeposited with equipment at the site such as dozers and front end loaders. The planting will be accomplished by broadcasting method or drilling whichever is the most convenient at the time. We have at this time no plans to use fertilizers for that purpose since the area will not be used for anything else than it was used for before our operation. The revegetation standard of necessity will be quite low since the area has no irrigation water supply to grow a heavy grazing cover. Therefore, we will do our planting very likely in the late fall of the year to take advantage of winter and early spring moisture. We will then fence off a 20' X 20' area somewhere on the property to keep the animals away in order to determine the revegetation growth. The revegetation success will have to be judged by that enclosed area. The slope of the ground at regrading will be as flat as reasonably possible to minimize the possibility of erosion.

Rule M-3 (2) (e) and Rule M-10 (1) - SCL
As stated in the previous paragraph, livestock grazing in that area is a rather nomadic activity as there is not sufficient moisture to keep the plants growing on a continuous basis. We feel that we will accomplish a reasonable slope and grass growth that will leave the area in better condition than it is now. The owner of the property concurs with us on these matters.

Rule M-3 (2) (f) - SS
In this and many other placer operations the deposits vary both in surface, shape, size and in depth. It is impractical and uneconomical to drill or test the deposits on a small

enough grid to establish a completely accurate quantity of the available ore. Therefore, let me state again the method of our operation: We will excavate the ores from an area, after properly removing the topsoil, process them through the plant and then returning them again into the excavated area. It is not practical to draw up plans that very likely cannot be followed because of the variation of materials encountered. It is our purpose to proceed in a reasonable and workmanlike manner to process these materials and leave the property in a state satisfactory to the owners.

Rule M-5 - SS - TNT
The material will be temporarily stockpiled fairly close to the area to be excavated. Therefore, haul distance is rather short. There are approximately 1,500 cu/ac topsoil and no more than that amount of gravel that would have to be replaced at any one time. Also the originally disturbed area we moved into covered at least four acres which is already under bond and we should not have to furnish an additional bond for that part. My information tells me that you accepted a bond of $2,000.00 for that area. I therefore request that our bond be judged on an equal basis.

Rule M-6 - TNT
The scale on the map is demonstrated at the bottom of the page in form of a bar scale. 1" = 50' is the same as 1:600. The bar scale is there for your convenience since the plat has been reduced from the original.

Rule M-10 (3) and (12) - TNT
Yes, however, there is a gravel cap on top of some of the areas which may be evaluated for processing at a later date. Should the decision be made to do this, we would expand the maps and submit them to you prior to our working those areas.

Rule M-10 (3) - TNT
Approvals from the State Engineer and Water Pollution Control have been given and copies are enclosed.

Rule M-10 (3, 5, 7, 8 and 15) - TNT
If the owner wishes to retain the ponds, we will apply for a variance in sufficient time before reclamation begins to get approval for such variance.

Rule M-10 (8) - RS
The blockage of the natural drainage and associated information has been supplied to the Water Pollution Control Board, and has been approved by them.

Rule M-10 (6) - RS
The ponds have been or are being lined with 12 inches of clay with permeability factors of 10^{-6} or less.

Rule M-10 (11) - TNT

Although the point of diversion of the water has been applied for at a certain point in the application the State Water Rights Division is aware that mining will occur in the south half of that section and according to Mr. Mark Page of the Water Rights Division, there is no problem with moving the point of diversion within that area since there are no other water users using that area as their point of diversion.

Rule M-10 (12) - SCL

As you notice on the Bond Estimate, an amount for the monitoring of the reclamation has been set apart. The optimum time for inspection would be in March or April.

Rules M-10 (14), M-3 (1) (f) (g), M-3 (2) (d) - TLP

The updated enclosed map should provide you with somewhat more details of what you asked for. Please understand that this is approximate only and is definitely subject to change as production progresses since the working of the area will very much depend on the availability of ore values.
The soil will be removed with bulldozers since we decided to use that type of equipment at the mine. Since the stockpiling of topsoil will be so close to the working area, it would be uneconomical to use scrapers at the present time, but this will be subject to change if conditions vary from the present. The depth of soil removal can easily be determinedby the operator without special helps of an engineering crew.
The stockpiles have no need of special erosion protection. As the people from your department who visited the site can verify, there was no visible erosion on a stockpile that had been there for at least two years.
The soil tabulation chart can be implemented and kept at the mine site for reports to your Department. Only the topsoil for the actual processing area will be stored for longer terms. All other storage will have to be short term because of the nature of our operation.
There are now some areas on that property where topsoil for all practical purposes, is non-existant. We will not haul in topsoil for those areas, but will try to distribute the available topsoil as much as possible.
Subsoil or overburden preparation will not be necessary since everything except the topsoil will be processed and redeposited in the pit and will be covered again as soon as possible with the topsoil. Since erosion is not a problem, the seeding can then take place at a climatological optimum time. This can be done in conjunction with the advice of the U.S. Soil Conservation advisor for that area.
The grass mixture per acre will consist of:

4 lbs Bluebunch Wheat Grass

5 lbs Standard Crested Wheat

3 lbs Russian Wild Rye

3 lbs Yellow Sweet Clover

The grading will be accomplished by means of equipment at the site at the time of required reclamation. Soil preparation, fertilizing and planting will be done with the advice of Kedric Somerville, Soil Technician, U.S.D.A. Soil Conservation Service, Monticello, Utah.

The 6,500 C.Y. is a typographical error. It should read 1,500 C.Y. instead.

We also state d in the application that topsoil replacement would be to a depth of 12" minimum. Please modify this to 12" more or less.

For your information, the topsoil stored for the four acres, disturbed prior to our entering the premises, is not nearly sufficient to reclaim that area with 12" of topsoil. It also appears that some of that topsoil might have been pushed onto a piece of ground which we do not have under lease, but which was staked by an individual after that soil had been deposited there, which means that he also has claim to whatever was there when he staked it. Unless we can come to reasonable terms with that party on that property, there is no legal way we can make use of that topsoil. Please consider these facts when making demands for reclamation that may not be able to be met. As I have stated before, we will not commit ourselves to importing topsoil onto that property for reclamation purposes.

SOIL TABULATION CHART

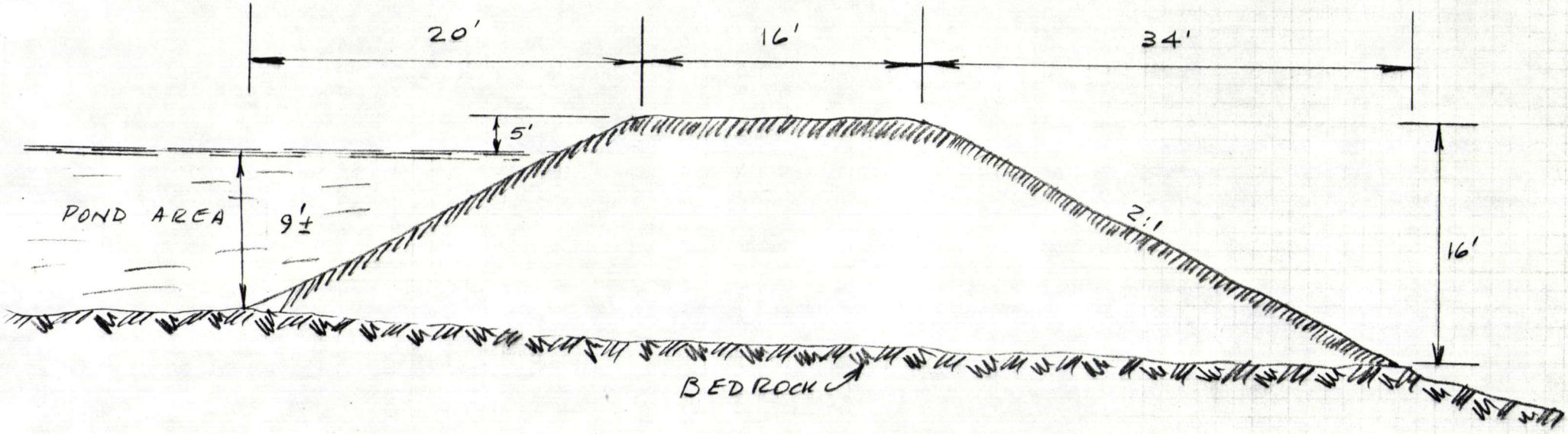
Area affected (in mining sequence)	Cato #1	Cato #2	Nancy
Acreage of area	4*	4*	5
Depth of topsoil removal (inches)	12"	12"	12"
Depth of topsoil replacement (inches)*	12"	12"	12"
Estimate of topsoil volume salvaged (yd^3)	3,000	4,000	7,000
Volume actually salvaged (yd^3)			
Volume required for reclamation (yd^3)	6,400	6,400	8,000
Surplus or deficit volume (yd^3)	-3,400	-2,400	-1,000
Storage status (short or long term)			
Storage location	See map	See map	See map
Area where soil used (if not stored)			
Running total (all stockpiles (yd^3)	3,000	4,000	7,000
Short term (less than 2 years)	3,000	4,000	7,000
Long term (less than 2 years)			

* These acreages include the previously disturbed areas from which a limited amount of topsoil was saved.

SAFETY RUNOFF RETENTION DAM

TAYLOR PROPERTY

"NANCY"



CROSS - SECTION

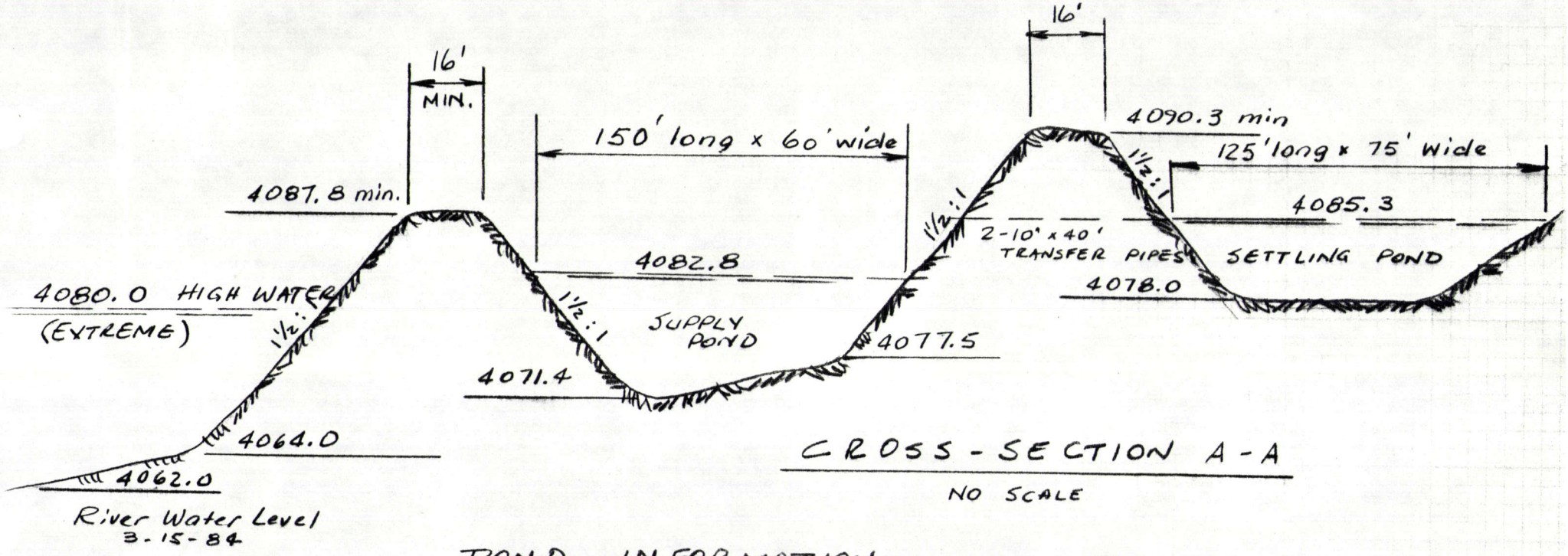
Approximate storage capacities:

Normal	300,000 gal
To spillway overflow	500,000 gal

CRATER EXPLORATION, INC.

Midvale — Utah

Taylor Property, Unit #3



CROSS-SECTION A-A

NO SCALE

POND INFORMATION:

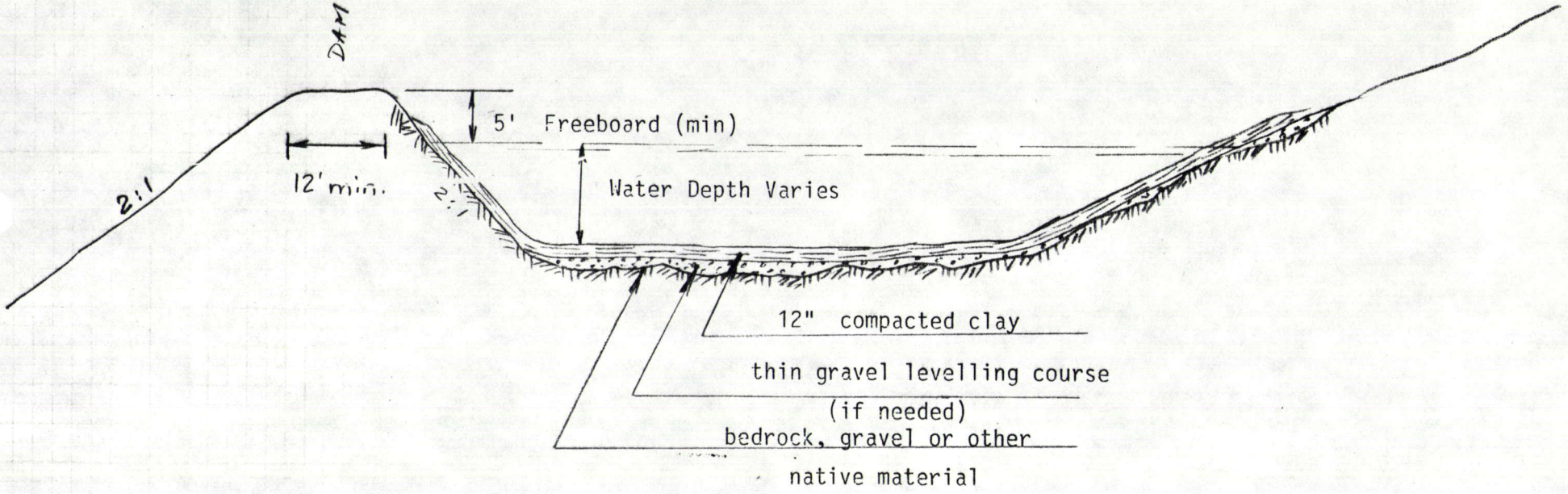
ESIMATED MIN. STORAGE CAPACITIES:

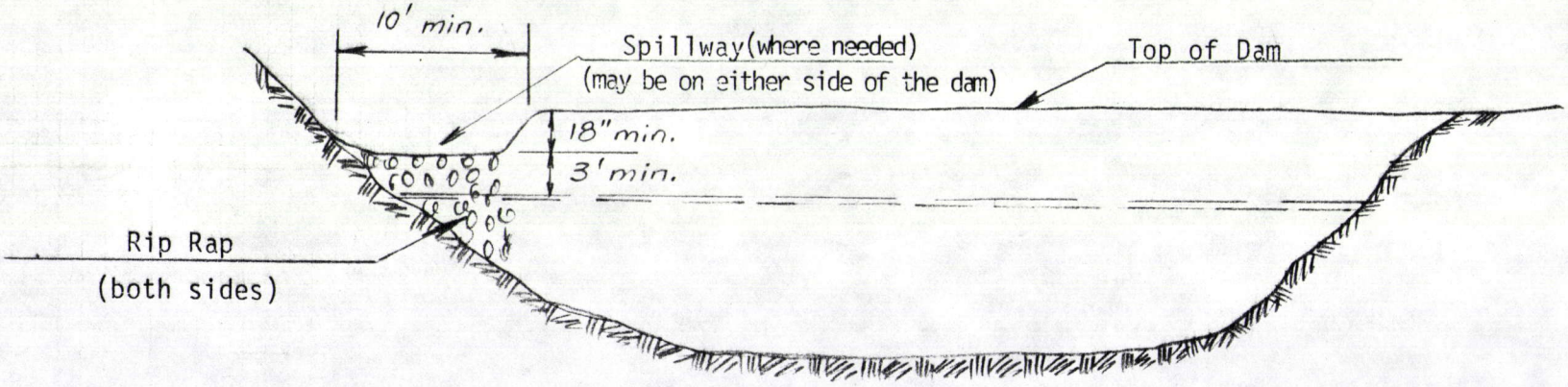
TAILINGS PONDS	220,000 gals.
SETTLING POND	400,000 gals.
SUPPLY POND	280,000 gals.
TOTAL STORAGE CAPACITY	900,000 gals.
SYSTEM WATER REQUIREMENTS & DISCHARGE	1,100 g.p.m.
ESTIMATED LOSS TO SEEPAGE & EVAPORATION	40 g.p.m.
MAKE-UP WATER PUMP CAPACITY	450 g.p.m.

TAILINGS POND CONSTRUCTION

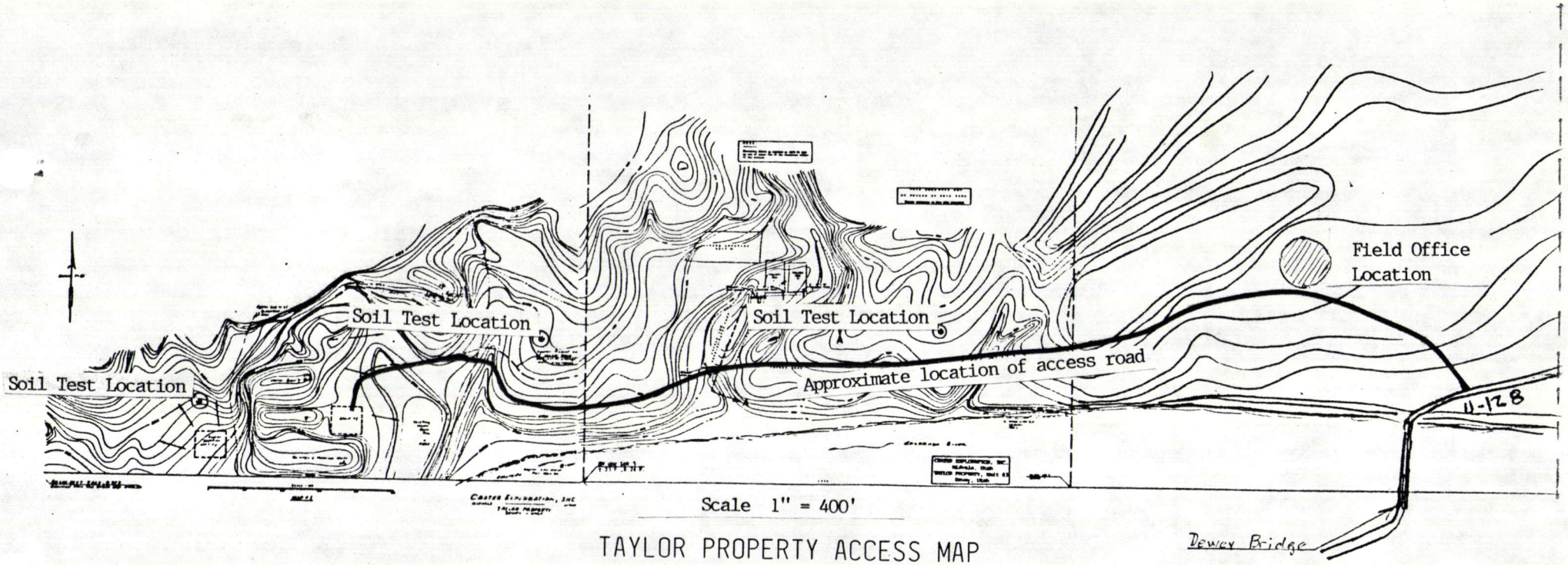
TAYLOR PROPERTY

TYPICAL SECTION



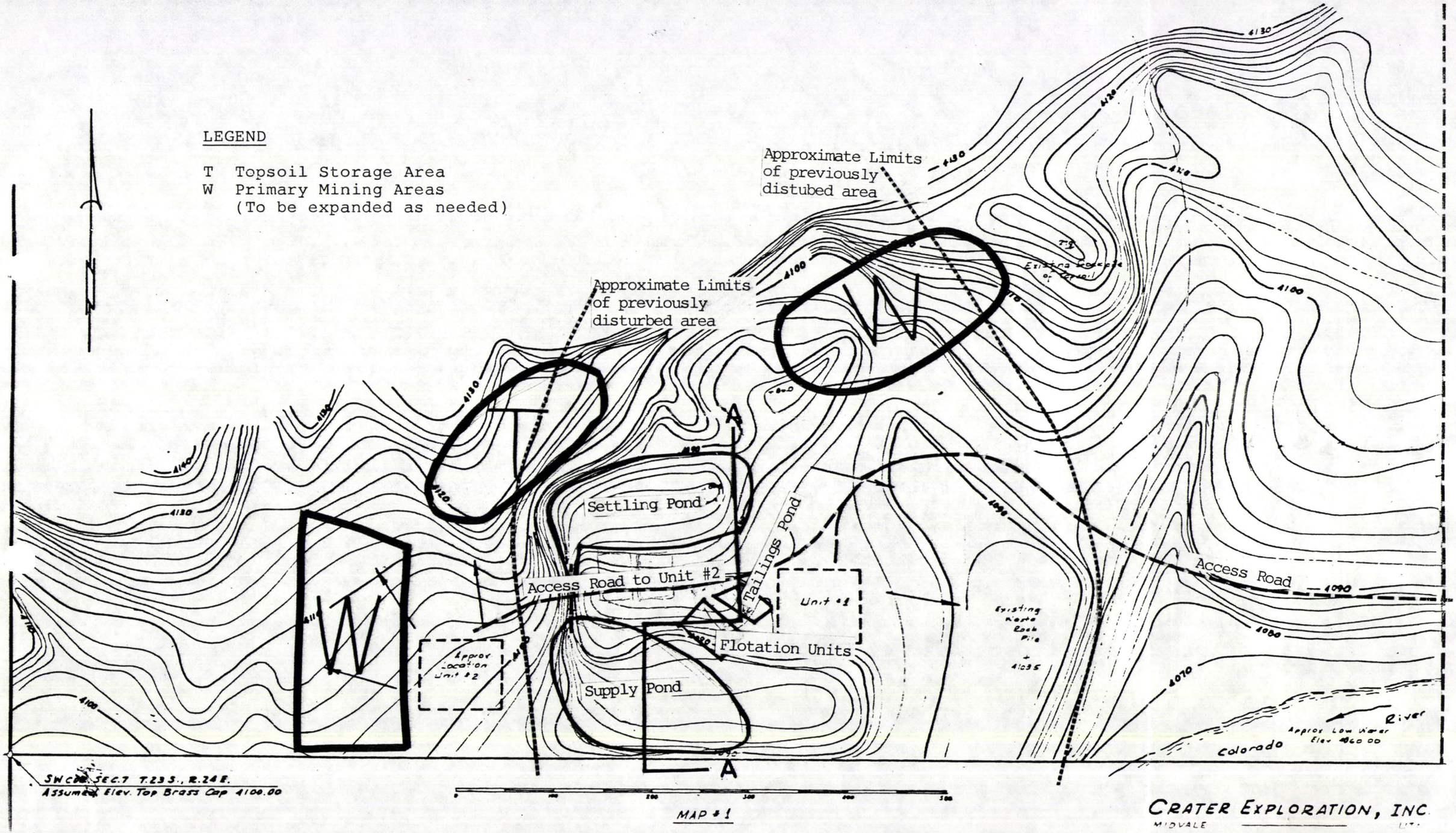


SPILLWAY CONSTRUCTION DETAIL



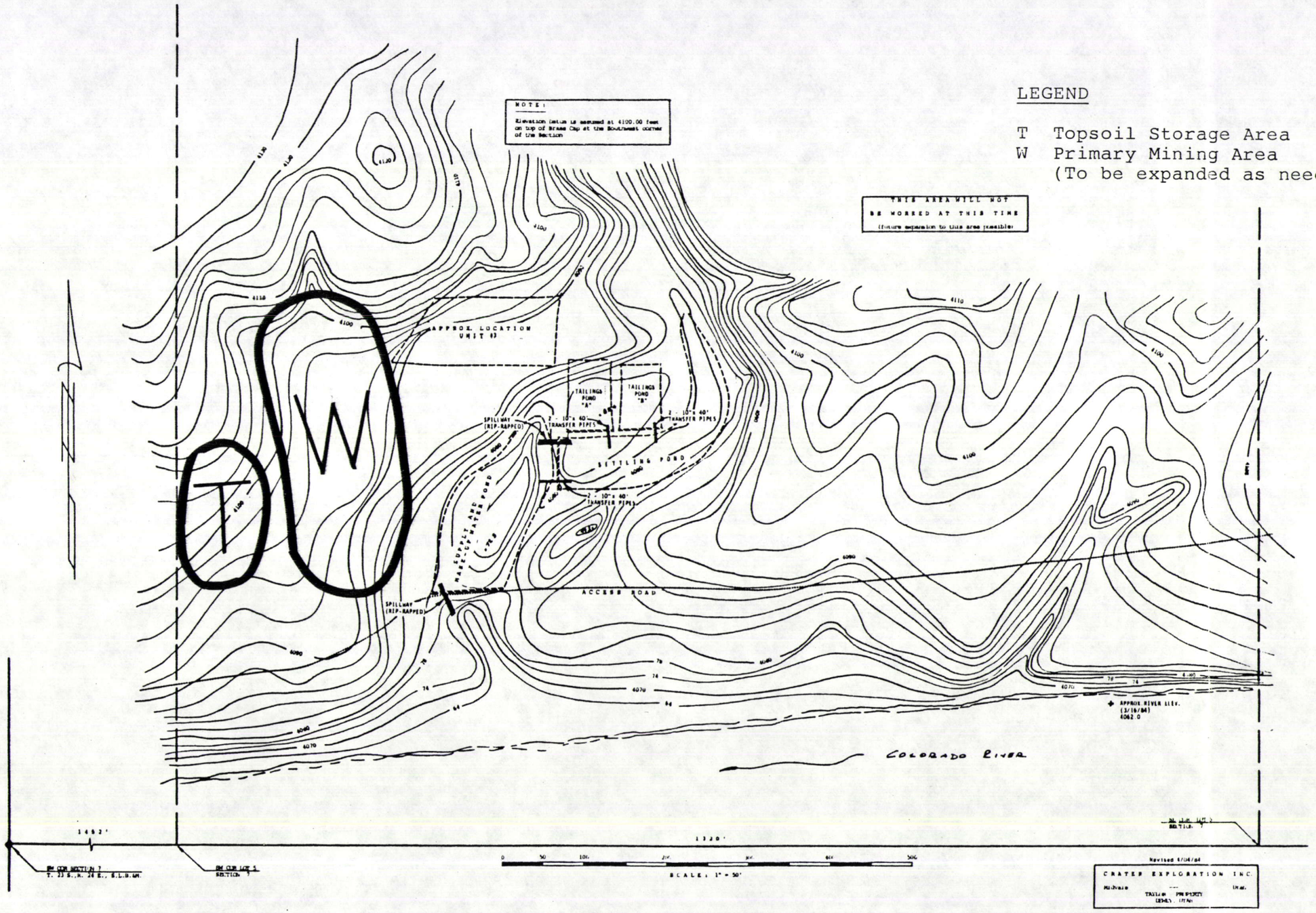
TAYLOR PROPERTY ACCESS MAP

CRATER EXPLORATION, INC.
SALT LAKE CITY, UTAH



MAP # 1

CRATER EXPLORATION, INC.
MIDVALE UT.


LEGEND
T Topsoil Storage Area
W Primary Mining Area
(To be expanded as needed)
NOTE:
Elevation datum is assumed at 4100.00 feet on top of Brass Cap at the Southwest corner of the Section
THIS AREA WILL NOT BE MINED AT THIS TIME
(Future expansion to this area possible)
APPROX. LOCATION UNIT #3
TAILINGS POND "A"
TAILINGS POND "B"
SETTLING POND
SPILLWAY (RIP-RAPPED)
2 - 10" x 40' TRANSFER PIPES
ACCESS ROAD
SUPPLY AND MARKET WATER POND
APPROX RIVER ELEV. (3/16/84) 4062.0
COLORADO RIVER
1462'
1320'
SCALE: 1" = 50'
CRATER EXPLORATION INC.